

1468

INTRACRANIAL HEMORRHAGE (ICH) AND CHANGES IN COLLOID OSMOTIC PRESSURE (COP). Paul Y.K. Wu, Maureen E. Sims, Vikram R. Udani, Yvonne D'Sylva and Harold A. Conrad. Univ. of So. Calif. Sch. of Med., LA County-USC Med. Ctr., Dept. of Pediatrics, Los Angeles.

ICH may evoke systemic and local changes in the forces which modify fluid flux between intravascular and interstitial spaces. The relation of these changes to alterations in blood COP was studied in 9 infants with ICH, diagnosed by real time B ultrasound CNS scanning during the first 72 hours postnatally. Their mean B.Wt. = 1322.5g and mean G.A. = 30.6 wks. COP was measured with a Wescor Colloid Osmometer (Model 4100) on the first and third postnatal days. Six other infants with comparable B.Wt. and G.A. but without ICH, as confirmed by ultrasound, were studied similarly. In infants with ICH the mean COP was 11.6 ± 1.1 and 15.0 ± 1.8 mmHg on the first and third day. This rise in COP was highly significant ($p < .001$). Infants without ICH had mean COP of 13.4 ± 1.2 and 13.6 ± 2.8 mmHg on the corresponding days. Rupture of cerebral blood vessels may stimulate axone reflexes producing vasodilation resulting in a rise in capillary blood pressure which may be independent of changes in arterial pressure. An excess of capillary blood pressure over COP leads to filtration of fluid from intra to extravascular spaces resulting in a rise in intravascular COP and development of interstitial edema.

1469

MYOGLOBIN LEVELS IN MOTHERS AND NEONATES. Kamal S. Yackzan and Barry M. Gray (Spon. by Hugh C. Dillon) University of Alabama in Birmingham, Diabetes Research and Training Center and Department of Pediatrics, Birmingham, Alabama.

This study was undertaken to provide information on myoglobin (Mb) levels in normal and distressed infants and their mothers at the time of delivery. 76 maternal and 70 cord sera, including 69 cord-maternal pairs, were examined using a radioimmunoassay method. The mean cord Mb was 28 ng/ml (range 4 to 111 ng/ml); the mean maternal Mb was 18 ng/ml (range 5 to 96 ng/ml). Mothers with complications of labor or delivery had significantly higher Mb (29 ng/ml) than mothers without difficulties (15 ng/ml, $p < 0.05$), but there was little correlation between maternal and cord values. Multiple regression models were constructed to assess factors influencing the Mb level. In both mothers and infants duration of labor, birth weight, fetal distress, and maternal complications were the most important factors. All contribute directly or indirectly to physical stresses which may be associated with release of Mb into the circulation. In infants race was also of importance, with black infants having higher Mb (mean 31 ng/ml) than white infants (23 ng/ml, $p < 0.08$); this was not accounted for by differences in stress-related parameters. There were no cases of renal failure among distressed infants, and Mb levels varied considerably in completely normal deliveries. Myoglobinemia probably contributes infrequently to the pathology of fetal distress.

1470

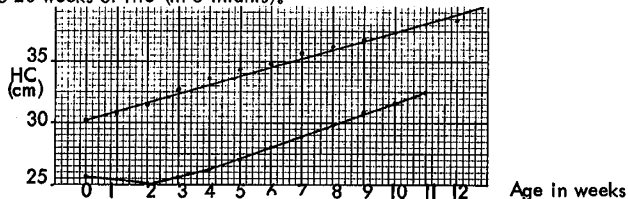
FEEDING AND SUPERIOR MESENTERIC ARTERY FLOW IN NEWBORN PIGLETS. Alice C. Yao, Phyllis M. Gootman, Patricia E. Pierce, Steve M. DiRusso and Norman Gootman, S.U.N.Y., Downstate Medical Center, Departments of Pediatrics & Physiology, Brooklyn, NY

This study examines the mesenteric blood flow response to feeding of newborn piglets. Experiments were performed in 21 term piglets age 4 hours to 4 weeks anesthetized with 0.25-0.75% halothane in O₂ (depending on age) paralyzed with decamethonium bromide and ventilated artificially to maintain normal arterial pH, pCO₂, and hydrated by 5% dextrose in 1/3 physiologic saline. The superior mesenteric artery flow was measured by electromagnetic probes. Arterial pressure, electrocardiogram and rectal temperature were simultaneously recorded. The stomach was intubated through the esophagus. Feeding in 10 or 15 ml increments (total amounts 23-27 ml/kg) of water or modified cow's milk elicited a 30-35% increase in mean mesenteric flow from the control values 1/2-1 hour postprandially in 7 piglets, 15-30 days old. Piglets under 2 days old showed the following flow changes from control values: an immediate but unsustained increase (10-30%) with water feed (8 cases); 5-12% decrease with modified cow's milk (3 cases) and 10-16% increment with sow's milk (3 cases) 1/2-1 hour after feeding. It is suggested that superior mesenteric blood flow response to feeding is age related.

1471

POSTNATAL HEAD GROWTH IN HEALTHY PREMATURE INFANTS. J.J. Yoon, K.D. Shin, A.E. Esquea and L. Rivas, Albert Einstein Coll. of Med., Bronx-Lebanon Hosp. Ctr. and State University of NY, Downstate Medical Ctr., Dept. of Pediatrics, Bronx, NY (Sponsored by M. Cohen).

Sixteen healthy premature infants born with no pre- and perinatal complications at The Downstate Medical Center from 1974 to 1975 and at The Bronx-Lebanon Hospital Center from 1979 to Nov. 1980 had weekly head circumference measurements until 12 weeks of life. Contrary to previously published studies, which consistently showed linear increases in head circumference from birth to 12 weeks for premature infants, our study showed significant postnatal delays prior to the establishment of linear head growth. The duration of retarded head growth appears to be inversely correlated with initial head circumference and birth weight. Infants who were 1000 gm or less required up to two weeks before beginning their linear increase in head circumference. When their head growth increase took place, the average head growth was 0.8 cm per week during the first 9 weeks of life, 0.6 cm/week from 9 to 12 weeks of life and 0.4 cm/week from 12 weeks to 20 weeks of life (in 5 infants).



1472

PREDICTIVE VALUE OF INVERSE EXPONENTIAL RELATIONSHIP OF BIRTHWEIGHT AND SUDDEN INFANT DEATH SYNDROME (SIDS) John E. Yount, (Spon. by John W. Reynolds) Univ. of Oregon Health Sciences Center, Dept. of Ped., Portland, Oregon

A previous report documented that SIDS incidence (SI) was predicted by birthweight (BW) among Oregon infants in 1975-77 by the equation $SI = 26.2 e^{(-0.70 \pm 0.05) BW}$ $r = 0.987$ (Ped. Res. Apr.79)

In 1978 and 1979 after an altered pattern of discharge assessment and selected home monitoring the population of infants born 2.0 Kg. at the major perinatal center (UHN) enjoyed a significant reduction in SIDS. The statewide risk curve still showed a similar but reduced relationship to birthweight.

$SI = 20.6 e^{(-0.64)BW}$ $r = 0.97$ $n = 8$ BW groups

OREGON SIDS INCIDENCE/1000 NEONATAL SURVIVORS

BW Kg.	1.0-	1.5-	2.0-	2.5-	3.0-	3.5-	4.0-	4.5-
1975-77	11.0	8.3	5.6	3.7	2.0	1.9	1.7	0.9
1978-79	9.97	5.1	5.9	4.3	2.6	1.3	1.5	1.0

By excluding the affected population under 2.0 Kg., the equation of risk for the state was very well matched to the 1975-77 curve.

$SI = 27.4 e^{(-0.71)BW}$ $r = 0.96$ $n = 6$ largest BW groups

We conclude that a unique equation of risk describes our population and that it is valuable in documenting the apparent effect of the prospective program of discharge assessment and monitoring.

1473

EFFECTS OF SUCTIONING TECHNIQUES ON AIRWAY PRESSURES AND TcPO₂. E. Zmora and T. Allen Merritt (Spon. by Donald L. Shapiro) Univ. of Rochester School of Med., Strong Memorial Hospital, Department of Pediatrics, Rochester, NY

Endotracheal (ET) suctioning is used for the removal of pulmonary secretions and to maintain the patency of airways and ET tubes. Although suctioning is essential for pulmonary toilet, a substantial drop in TcPO₂ during these procedures has previously been shown. Using our routine ET suction protocol (AJDC 134:250, 1980) and double lumen ET tubes, pressures at the proximal and distal ends of the ET tube, TcPO₂, and heart rates were measured in intubated infants. When negative pressure generated by the suction system (Regu-gauge suction system) was 50 mmHg, and suction catheter diameter was 8F, pressure within the trachea dropped to -53 ± 5 cm H₂O and TcPO₂ dropped a $\times 23 \pm 6\%$. Using a 5F suction catheter the intratracheal pressure did not change during suction, and TcPO₂ dropped by $12 \pm 2\%$ ($p < 0.01$) and similar volumes of pulmonary secretions were obtained. Heart rate dropped $16 \pm 8\%$ and $8 \pm 5\%$ respectively (NS). Our data indicate that ET tube suctioning requires consideration of the suction pressure and the ET tube lumen/suction catheter diameter ratio. Use of reduced suction pressures and a decreased catheter to ET lumen ratios are required to prevent precipitous drops in airway pressure and TcPO₂. (Supp. by HD-13279)